

GLOSSARY

Section I Abbreviations

A

Ampere

ac

Alternating Current

ADP

Automated Data Processing

AFD

Adjustable Frequency Drives

AGM

Absorbent Glass Mat

Ah

Ampere-Hour

ANSI

American National Standards Institute

AWG

American Wire Gauge

CFC

Chlorofluorinated Hydrocarbons

CO₂

Carbon Dioxide

CPU

Central Processing Unit

dB

Decibels

dc

Direct Current

DIPS

Dual-in-line Packs

EM

Electromagnetic

EMI

Electromagnetic Interference

ESD

Electrostatic Discharge

FET

Field-Effect Transistors

GELL

Gelled Electrolyte Design

GHz

Gigahertz

HDF

Harmonic Distortion Factor

HVAC

Heating, Ventilating, and Air Conditioning

ICEA

Insulated Cable Engineering Association

ICM

Insurance Company Manuals

IEEE

Institute of Electrical and Electronics Engineers, Inc.

IGBT

Insulated Gate Bipolar Transistors

ITE

Information Technology Equipment

ITI

Information Technology Industry Council

kHz

Kilohertz

KOH

Potassium Hydroxide

kVA

Kilovolt Amperes

kVAR

Kilovolt Amperes Reactive

kW

Kilowatts

LC

Inductive-Capacitive

LPI

Lightning Protection Institute

M-G

Motor-generator

MHz

megahertz

NEC

National Electrical Code

NEMA

National Electrical Manufacturers Association

NETA

International Electrical Testing Association

NFPA

National Fire Protection Association

NICAD

Nickel Cadmium

OSHA

Occupation Safety & Health Administration

pF

Picofarads

PVC

Polyvinyl Chloride

RF

Radio Frequency

RFI

Radio Frequency Interference

RMS

Root Mean Square

SCR

Silicon Controlled Rectifier

SMPS

Switching Mode Power Supplies

THD

Total Harmonic Distortion

TTL

Transistor-Transistor Logic

TVSS

Transient Voltage Surge Suppressors

UL

Underwriters' Laboratories

UPS

Uninterruptible Power Supplies

VA

Volt Ampere

VAR

Volt Amperes Reactive

VRLA

Valve Regulated Lead-Acid

Section II

Terms

ALARM

A condition which is annunciated but does not cause shutdown.

ALTERNATE POWER SOURCE

One or more generator sets, or battery systems where permitted, intended to provide power during the interruption of the normal electrical service; or the public utility electrical service intended to provide power during interruption of service normally provided by the generating facilities on the premises.

AMBIENT TEMPERATURE

The temperature of the environment immediately surrounding the systems into which heat is dissipated. For forced air-cooled units, the ambient temperature is measured at the air intake.

AMERICAN WIRE GAUGE (AWG)

A standard for sizing cross-sectional areas of wire and for measuring sheet-metal thickness

AMPERE (A)

Electron or current flow representing the flow of one coulomb per second past a given point in a circuit.

ANTIMONY

An element sometimes used to harden the plate material used in lead acid cells.

APPLIANCE

Electrical equipment, generally other than industrial, normally built in standardized sizes or types, which is installed or connected as a unit to perform one or more functions.

ARC

Sparkling that results when undesired current flows between two points of differing potential. It may be due to leakage through a contaminated leakage path.

ARRESTER

A device placed across the conductors of a power transmission line or data line to suppress high-amplitude transients.

AUTOMATIC TRANSFER

A transfer between electrical power sources without operator/user involvement and is usually based upon the status or condition of the input/output ac power.

BATTERY

A group of cells connected to deliver more voltage and/or more current than a single cell.

BRANCH CIRCUIT

One division of a load circuit. Its current drain is limited by a fuse or circuit breaker.

BROWNOUT

A commercial line voltage reduction necessitated by inadequate generator capacity at a particular time. Nominal reductions are 3%, 5%, or 8%.

BYPASS SOURCE

An alternate source for the critical bus which can be connected to the load in the event of a UPS failure or for routine maintenance.

CALCIUM

An element sometimes used to harden the plate material used in lead acid cells.

CAPACITOR

Two plates or conductors separated by a dielectric material. Applying a voltage across the plates causes current to flow and stores a charge.

CELL

A unit containing a combination of metal plates and an electrolytic solution. When connected to an external circuit, a charged cell reacts chemically and delivers an electrical output.

CHARGE VOLTAGE

The voltage level maintained in a cell or battery in its maximum charge condition.

CIRCUIT BREAKER

A device, usually electro-mechanical, which detects excessive power demands in a circuit and self-interrupts when they occur.

CLAMP

To limit the voltage to a specified level by limiting the voltage source.

COAX

A cable consisting of two concentric conductors separated by a dielectric material. Usually flexible, but maintains constant conductor spacing under stress.

COMMON-MODE VOLTAGE

One common to both signal input (or power input) terminals of a circuit. An undesired common-mode voltage is usually developed between the zero signal reference ground and some other ground point.

COMMUTATION

A term used to mean “turning off a SCR.” For this to be accomplished, the gate signal must be removed and the current through the SCR must be reduced to zero.

CONDUCTIVE

Adjective describing not only those materials, such as metals, which are commonly considered as electrically conductive, but also that class of materials which, when tested have a resistance not exceeding 1,000,000 ohms. Such materials are required where electrostatic interconnection is necessary.

CONNECTION

One which indicates the location and describes the types of connectors to be used at every junction in the distribution system.

CORE

The iron form or frame on which a choke or transformer is wound.

CRITICAL EQUIPMENT

That equipment essential to the safety of the occupants of the facility.

CRITICAL LOAD

Equipment that must have an uninterrupted power input to prevent damage to a facility or to itself, or to prevent damage or injury to operating personnel.

CROWBAR

The characteristic of a protective device (i.e., gas tubes, SCR, thyristor) causing a momentary short circuit between two protected points in a circuit when an over-voltage occurs.

DIRECT CURRENT (dc)

An electric current flowing in one direction.

DELTA

A method of connecting a three-phase source or load in a closed series loop with the output or input connections made to each of the three junctions.

DISK

A memory device used to store data for future computer use.

DUTY CYCLE

The ratio of operating time to non-operating time.

ELECTROLYTE

The acid or alkaline solution surrounding the plates of a battery cell.

EMERGENCY SYSTEM

A system of feeders and branch circuits used in meeting the requirements of Article 700 of NFPA 70, National Electrical Code, and intended to supply alternate power to a limited number of prescribed functions vital to the protection of life and safety, with automatic restoration of electrical power within ten seconds of power interruption.

ENGINE GENERATOR

Combination of an internal combustion engine and a generator.

EQUALIZE

A brief charge with an elevated voltage (about 2.33 volts/cell) to equalize the specific gravity of the cells in a battery string.

FARADAY SHIELD

A metallic housing, screen, or sheath that substantially reduces the effect of electric fields or for providing a means for reducing electrostatic coupling between conductors.

FAILURE

An incident which increases the hazard to personnel or patients or affects the safe functioning of electric appliance or devices. It includes failure of a component, loss of normal protection paths such as grounding, and short circuits or faults between energized conductors and the chassis.

FAULT CURRENT

A current in an accidental connection between an energized and a grounded or other conductive element resulting from a failure of insulation, spacing, or containment of conductors.

FEEDBACK

Energy coupled from the output of a circuit to its input.

FEEDER

All circuit conductors between the service equipment, or the generator switchboard of an isolated plant, and the final branch circuit over-current device.

FERRO-RESONANCE

Resonance resulting when the iron core of an inductor that's part of an LC circuit is saturated, increasing the inductive reactance to the value of the capacitive reactance.

FLASHOVER

Flashing due to high current flowing between two points of different potential. Usually due to the insulation breakdown caused by arcing.

FLOOR LOADING

A statement of the force, usually in lbs/ft^2 , exerted on a floor when equipment is installed.

FLUCTUATION

A sag or swell in voltage amplitude, often caused by load switching or fault clearing.

FLYWHEEL

A large, heavy wheel used as a governor to maintain constant generator speed by inertial force.

FOLLOW CURRENT

The current from the connected power source that flows through an arrester (typically gas tube) during or following the passage of discharge current.

FREQUENCY DEVIATION

A swing away from nominal frequency.

GATE

A logic element but usually refers to the signal lead of an SCR. By applying a gate signal to this lead, the SCR can be commanded to the conducting state if it is forward biased.

GATE SIGNAL

The signal applied to the gate lead of a SCR by the GFM.

GROUND

A connection from a circuit or object to the earth.

GROUND FAULT

Any undesired current path from a point of differing potential to ground.

GROUNDING

A system of conductors which provides a low-impedance return path for leakage and fault currents. It coordinates with, but may be locally more extensive than, the grounding system described in Article 250, NFPA 70, National Electrical Code.

HARMONICS

A periodic waveform can be expressed as a sum of sinewaves which are integral multiples of the repetitive frequency of the waveform. The first harmonic is often referred to as the fundamental and is one times the frequency. The second harmonic is 2X, the third 3X, etc. Harmonics present in a waveform will cause its shape to deviate from a sinewave, so in UPS systems, it is desirable to have low harmonic distortion.

HARMONIC DISTORTION

The presence of harmonics that change an ac voltage waveform from sinusoidal to complex.

IMPEDANCE

Impedance is the ratio of the voltage drop across a circuit element to the current flowing through the same circuit element. The circuit element may consist of any combination of resistance, capacitance or inductance. The unit of impedance is the ohm.

INDUCTOR

A conductor, usually coiled, which tends to oppose any change in the flow of current through itself.

INRUSH CURRENT

The initial surge current demand before a load resistance or impedance increases to its normal operating value.

INVERTER

The subsystem of the UPS which converts dc power to ac power for the critical load.

ION

An electrically charged atom.

ISOLATION TRANSFORMER

Any transformer not having a dc current path connecting the primary and secondary windings.

JOULE

A unit of energy that is a function of voltage, current, and time. One joule is equal to one watt-second.

LINE CONDITIONER

A circuit or device designed to improve the quality of an ac line.

LOAD

The driven device that uses the power supplied by the source.

LOAD SWITCHING

Transferring the load from one source to another.

MAGNETIC FIELD

Flux, Φ . The pattern of magnetic force lines surrounding a magnet or energized electromagnet or inductor.

MIL-SPEC OR MIL-STD

Document issued by one of the military or government departments, stipulating specifications and outlining tests to determine that an item conforms to specifications.

MOTOR-GENERATOR

Combination of an ac motor and an ac generator. The motor is driven from the ac source and the generator becomes the new source for the load. Provides very good isolation from ac power line fluctuations and short-term anomalies.

NEUTRAL

The junction point of the legs in a wye circuit.

NEUTRALIZING WINDING

An extra winding that cancels the harmonics developed in the saturable secondary, resulting in a sinusoidal output from a ferroresonant transformer.

NOISE

Continuous or intermittent low energy disturbances superimposed on a useful waveform which may obscure its information content. Typically low voltage, low current, and repeatable frequency.

NON-PROGRAMMED JUMP

A skip of one or more of the ordered instructions in a computer program due to the presence of a spurious pulse or transient.

ORDERLY SHUTDOWN

Sequential shutdown of the units comprising a computer to prevent garbling or loss of data, or damage to the system.

OSCILLATION

Flywheel action in an LC circuit caused by the current generated by the alternate charge and discharge of the capacitor and the expansion and contraction of the magnetic field around the inductor.

PERIPHERAL

Any device used to process data for entry into or extraction from a computer.

PHASE COMPENSATION

Switching capacitors into or out of the power distribution network to compensate for load power factor variations.

PHASE CONTROL

A form of regulation which controls the output of a SCR circuit by varying the conduction time of the SCR.

PLANTE PLATE

A positive cell plate made from a cast lead antimony grid with lead buttons embedded in its surfaces. Named for its inventor.

POWER FACTOR

W/VA. The ratio of real power to apparent power. It will be "leading" or "lagging," depending upon which way the load shifts the circuit current phase with respect to the voltage phase. Inductive loads cause the current to lag; capacitive loads cause the current to lead. Most loads are inductive.

POWER LINE MONITOR

A device to detect and indicate changes in power line frequency and/or voltage amplitude.

POWER OUTAGE

An interruption of commercial power.

POWER PROFILE

A graph of the power requirements for a composite load during the start-up period, from turn-on until steady-state operations commences.

PROTECTOR

A device that detects a fault and protects against it.

REACTANCE

The component of impedance contributed by inductance or capacitance. The unit of reaction is the ohm.

REFLECTION

The return wave generated when a traveling wave reaches the load, the source, or a junction point where there is a change in line impedance.

RELIABILITY

The likelihood of trouble-free performance from a component or an assembly. Principally, a function of MTBF and MTTR.

RESISTOR

A device or material that develops a voltage drop when current passes through it.

RESPONSE TIME

The time interval for a protective device to respond to a transient over-voltage condition and begin clamping.

ROTATING FIELD

The electrical field developed in a multi-phase generator. The varying currents through the pairs of stator windings cause the magnetic field to vary as if it were a single rotating field.

SATURABLE REACTOR

A transformer-like device. One winding has a core that saturates when a small amount of current is passed through it. This saturation causes a large change in the inductance of the main winding, thus controlling the current through it.

SENSOR

Any device used to detect electrical variations, temperature variations, etc., within a system.

SHUNT

A device used to convert a large dc current to a low dc voltage for metering purposes.

SHUNT TRIP

An electromagnetic trip used in circuit breakers to allow control circuits to open the breaker.

SOLENOID

A coil used to actuate a relay armature.

SPIKE

An unusually high and sharply defined transient.

STATIC SWITCH

A solid-state switch noted for its high speed. The static switch connects the bypass source to the critical bus in the event of a UPS failure. It is designed only for momentary use until the bypass breaker has time to close.

STRESS

External force or action applied to a component or assembly that tends to damage or destroy it.

SUBSTATION

A facility where power at lower levels is taken from the high voltage transmission line. Houses step-down transformers and switchgear required for local distribution.

SUPPRESSOR

A device that is used to arrest (keep down) excessive force, such as voltage transients. Will suppress unwanted voltage above a specified level.

SURGE

A sudden rise of current or voltage.

SURGE CURRENT

The current flowing in a circuit associated with a transient over-voltage condition.

SWITCHGEAR

Any switches, relays, or protective devices used to control power distribution.

SYNCHRONOUS MOTOR

An ac motor whose speed is exactly proportional to the power input frequency.

THREE-PHASE POWER

Three separate outputs from a single source. There is a phase difference of 120 degrees between any two of the three voltages.

TRANSDUCER

Any device that senses one form of energy and converts it to another, as sound, force, temperature, or humidity to electrical energy, or vice versa.

TRANSFER

Refers to the act of switching the critical load from the UPS to the bypass source or from the bypass source to the UPS.

TRANSFER SWITCH

One used to transfer the load from one source of power to a different source of power.

TRANSIENT

A high-amplitude, short-duration pulse superimposed on the normal voltage.

TRANSMISSION LINE

The conductors used to carry electrical energy from one location to another.

TRAVELING WAVE

One that moves along a transmission line in both directions from any point where a step voltage change occurs.

TRIP/TRIP CONDITION

If a major alarm condition is detected, the UPS will automatically remove itself from the sync bus and shut itself down. This is known as a “trip.” Any condition that results in a trip is a trip condition.

UNINTERRUPTIBLE POWER SUPPLY (UPS)

A power source consisting of a rectifier, inverter, and batteries, continuously supplying power to a load from the inverter.

VOLT

Unit of measurement of electromotive force or potential difference. Symbol E, in electricity; symbol V in semiconductor circuits.

VOLTAGE

A derivative electrical quantity, E, measured in the unit volts and defined in terms of the independently obtained ampere, I, and the unit of resistance, ohm (R) by ohms law $E = IR$.

VOLTAGE CONTROL

A mode of regulation for the rectifier/charger or the inverter in which the output voltage is regulated to a constant value.

VOLTAGE DROP

Difference in potential between two points in a passive component or circuit.

VOLAGE REGULATOR

A circuit that develops a constant output voltage regardless of input voltage variation.

VOLTAGE REGULATION

1) The process of holding voltage constant between selected parameters, the extent of which is expressed as a percent. 2) The relative percent change of voltage during (cell/battery) discharge.

WYE

A three-phase source or load connection, with a single common junction and three-phase lines out or in.